

Semi-Annual Progress Report
"Creation and Delivery of New Superpixelized DIRBE Map Products"
August 10, 1998
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During year 1 of this project, our schedule called for:

1. completion of code to generate intermediate files containing the individual DIRBE observations which would be used to make the superpixelized maps.
2. completion of code necessary to generate the maps themselves.
3. quality control on test-case maps in the form of point-source extraction and photometry.

Items 1 and 2 are well in hand and the tested code is nearly complete. A few test maps have been generated for the tests mentioned in item 3, although tests show that a refinement of our point-source extraction algorithm is necessary. We are not yet in production mode for map generation.

Major Accomplishments:

- Code has been written and tested for computation of zodiacal light model for each 1/8th-second observation. Because of the complexity of the final model, exact evaluation of the model for each data point was computationally prohibitive. To remedy this, the model is now evaluated by interpolating both in time and space between an established grid of zodiacal intensities. The accuracy of the interpolation is within 1% of the exact model. For most applications, this is sufficient, especially given that the model itself does not represent exact nature of the zodi.
- Code was adapted from the DIRBE pipeline software for evaluation of the positions of solar system objects. Use of the DIRBE pipeline algorithm was considered most true to the delivered data products, and best for traceability with other DIRBE data products. Solar system object positions are evaluated for each day of the cold mission, and exclusion zones established based on the DIRBE script choices.
- Mission-averaged, zodi-subtracted, test maps were generated for a 20-degree square region near the Cygnus loop for the purpose of testing our point source extraction algorithm. We ran our first-cut point-source extractor on these maps. We will need to revise this algorithm to account for the slightly elliptical shape of the point sources.

Deviations from plan:

- We used FORTRAN rather than C, because it was much easier to recycle code from the DIRBE solar system object extraction rather than go through the effort of recoding it all.
- We switched from using the time-ordered-data (TOD) as our ingest dataset to rather using the Calibrated Individual Observations (CIO) data product. When the proposal was originally submitted, the CIO product was not available. This product is superior to the TOD for our

purpose because the sort of high-quality science data has already been performed, and the attitude is in a more user-friendly form as well.

Near-term future plans include gearing up for map production, and refining the point-source extraction algorithm.

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13. ABSTRACT (Maximum 200 words) Semiannual progress report entitled, "Creation and Delivery of New Superpixelized DIRBE Map Products." Phase 1 called for the following tasks: <ul style="list-style-type: none"> • completion of code to generate intermediate files containing the individual DIRBE observations which would be used to make the superpixelized maps; • completion of code necessary to generate the maps themselves; and • quality control on test-case maps in the form of point-source extraction and photometry. Items 1 and 2 are well in hand and the tested code is nearly complete. A few test maps have been generated for the tests mentioned in item 3. Map generation is not in production mode yet.				
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